

CLAIMS

1. A thermoplastic layered alkyl siloxane with the composition represented by the general formula $(\text{RSi}_{1+x}\text{O}_{2+1.5x+0.5z}\text{L}_z)_m$ (here, R is an alkyl group, L is H, Si or a group capable of easily changing the OL group into the OH group in a solution or a suspension, and $0.5 \leq x \leq 2$, $2 \leq m \leq 200$, $0 \leq z$).

2. The thermoplastic layered alkyl siloxane according to claim 1, characterized in that the melting point is in a temperature range of -30 to 60°C.

3. The thermoplastic layered alkyl siloxane according to claim 1 or 2, characterized in that the decomposing temperature is 300°C or more.

4. A production method for the layered alkyl siloxane according to any one of claims 1 to 3, characterized in that an alkyl silane compound represented by the general formula $\text{RSi}(\text{OL})_3$ (here, R is an alkyl group, L is H, Si or a group capable of easily changing the OL group into the OH group in a solution or a suspension) is reacted with water in a solvent or a dispersion medium.

5. The production method for a thermoplastic layered alkyl siloxane according to any of claim 4, characterized in that a silicon compound represented by the general formula $\text{Si}(\text{OM})_4$ (here, M is H, Si or a group capable of easily changing the OM group into the OH group in a solution or a suspension) is reacted in a solvent or a dispersion medium.

6. The production method for a thermoplastic layered alkyl siloxane according to claim 4 or 5, characterized in that an alkaline reagent or an acidic reagent is used as a catalyst.

7. The production method for a thermoplastic layered alkyl siloxane according to any one of claims 4 to 6, characterized in that an ammonium is used as a catalyst, and reaction is carried out with the reagent concentration in the reaction liquid of 10 wt% or more at 50°C or more.

5

8. The production method for a thermoplastic layered alkyl siloxane according to any one of claims 4 to 7, characterized in that the reagent concentration in the reaction liquid is controlled in a range of 10 to 80 wt% in the reaction temperature ranging from 50 to 200°C.

10

9. A coating agent, characterized in containing the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 as the effective component.

10. A compact, characterized in being shaped using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3.

15

11. The compact according to claim 10, characterized in being a thin film.

12. The compact according to claim 11, characterized in that the thin film is a single layer of an inorganic/organic composite.

20

13. A filler, characterized in using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 for providing at least a part thereof.

14. An energy storing material, characterized in using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 for providing at least a part thereof.

25

15. A temperature sensor, characterized in using the thermoplastic layered alkyl siloxane according to any one of claims 1 to 3 for providing at least a part thereof.